

USFILTER WESTATES CARBON

VOCARB® P60 AND ~~P70~~

Coal based pelletized activated carbon

(Formerly AP-640 and AP-620)

IDEALLY SUITED FOR GAS PHASE

ADSORPTION APPLICATIONS

Benefits and Design Features:

- *Exceptionally high VOC adsorption capacity*
- *Excellent VOC retentivity characteristics*
- *Cost effective*
- *Suitable for multiple cycles of regeneration and high temperature reactivation*
- *High ignition temperature*
- *Easily reactivated for recycle and reuse*
- *Low-pressure drop characteristics*
- *Backed by technical support and a strong QA/QC program*

Description

VOCarb® P60 and VOCarb® P70 are pelletized activated carbons manufactured from a high grade metallurgical coal (anthracite). They possess both a high surface area and a large internal pore volume. These properties give VOCarb® P60 and P70 not only high VOC adsorption capacities but also high retentivities for retaining and preventing the desorption of previously adsorbed organic compounds. Being manufactured from a high rank anthracite coal results in an inherently low ash content, making these carbons ideally suited for critical gas phase adsorption applications. Its 4 mm diameter and pellet shape allow for a low bed pressure drop even at high gas flow rates. The superior hardness of these carbons result in minimal attrition and offer excellent resistance to dust and fines formation.

VOCarb® P70 has been more highly activated when compared to VOCarb® P60, resulting in a carbon that has both a higher surface area and a more macroporous pore structure. These properties significantly increase the VOC working capacity of VOCarb® P70 when it is used in solvent recovery applications.

Applications

Cost effective VOCarb® activated carbons developed by USFilter have been demonstrated to provide superior performance in an extensive array of gas phase treatment applications. VOCarb® activated carbons are available for:



- Solvent recovery operations
- Chemical process applications
- VOC control from air strippers, soil vapor extraction and air sparge systems
- Control of tank vent emissions
- HVAC
- Odor control
- As a substrate for odor control carbon manufacture and as a catalyst support

Quality Control

All VOCarb® activated carbons are extensively quality checked at our State of California certified environmental and carbon testing laboratory located in Los Angeles, CA. USFilter's laboratory is fully equipped to provide complete quality control analyses using ASTM standard test methods in order to assure the consistent quality of all VOCarb® carbons.

Our technical staff offers hands-on guidance in selecting the most appropriate system, operating conditions and carbon to meet your needs. For more information, contact your nearest USFilter representative.

VOCARB®

P60 AND P70

Coal based pelletized activated carbon

(Formerly AP-640 and AP-620)

SPECIFICATIONS/TYPICAL PROPERTIES		
	VOCarb® P60	VOCarb® P70
Carbon Type	Anthracite Coal	Anthracite Coal
Mesh Size, U.S. Sieve	4 x 6	4 x 6
Butane Activity ⁽¹⁾ (min)	23.5	27.5
Hardness No., Wt.% (min)	95	95
Moisture Content, Wt.% (as packed, max)	2	2
Apparent Density, g/cc	0.47 - 0.53	0.47 - 0.53
Mean Pellet Diameter, mm	4.0 - 4.25	4.0 - 4.25
CTC Activity (min)	60	70

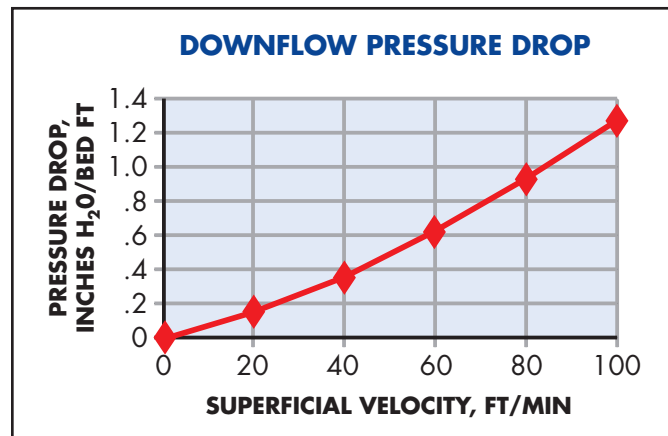
(1) Butane activity (D5742) has been adopted by ASTM as a replacement for CTC activity (D3467) as a test method for estimating the micropore volume of an activated carbon.

Safety Note: Under certain conditions, some compounds may oxidize, decompose or polymerize in the presence of activated carbon causing a carbon bed temperature rise that is sufficient to cause ignition. Particular care must be exercised when compounds that have a peroxide-forming tendency are being adsorbed. In addition, the adsorption of VOCs will lead to the generation of heat within a carbon bed. These heats of reaction and adsorption need to be properly dissipated in order to fully assure the safe operation of the bed.

Wet activated carbon readily adsorbs atmospheric oxygen. Dangerously low oxygen levels may exist in closed vessels or poorly ventilated storage areas. Workers should follow all applicable state and federal safety guidelines for entering oxygen depleted areas.

All information presented herein is believed reliable and in accordance with accepted engineering practices. USFilter makes no warranties as to the completeness of this information. Users are responsible for evaluating individual product suitability for specific applications. USFilter assumes no liability whatsoever for any special, indirect or consequential damages arising from the sale, resale or misuse of its products.

USFilter reserves the right to change the specifications referred to in this literature at any time, without prior notice. VOCarb is a trademark of United States Filter Corporation or its affiliates.



Westates
Customer and
Technical Service Network:

- Gulf Coast Region 800.659.1723
(Louisiana) 225.744.3153
- Western Region 800.659.1771
- Mid-Atlantic Region 800.659.1717
- Midwest Region 708.345.7290
- Northwest Region 800.659.1718
- Southeast Region 225.744.3153
- New England Region 800.659.1717

www.usfilter.com

Material Safety Data Sheet

SECTION 1 – CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name: Activated Carbon, including AquaCarb Series, VOCarb Series, AC Series, VC Series, BevCarb Series, and UltraCarb Series

Part Number: 101

Chemical Family: activated carbon

Manufacturer's Name: Siemens Water Technologies Corp.

Address: 181 Thorn Hill Road, Warrendale, PA 15086

Product/Technical Information Phone Number: (323) 277-1500

Medical/Handling Emergency Phone Number: CHEMTREC (800) 424-9300

Transportation Emergency Phone Number: CHEMTREC (800) 424-9300

Issue Date/Revision Number: June 2006/Rev 1

SECTION 2 – COMPOSITION INFORMATION

<u>Chemical Name</u>	<u>Percent by Weight</u>	<u>CAS#</u>
Activated Carbon	100	7440-44-0

SECTION 3 – HAZARDS IDENTIFICATION

Appearance & Odor: black granules without taste or odor

Emergency Overview:

- ◆ Dust that contacts eyes may be irritating or cause mechanical injury.
- ◆ Dust may cause slight skin irritation.
- ◆ Dust may be irritating to the respiratory tract and cause coughing or sneezing.
- ◆ Ingestion of powder may be irritating to the gastrointestinal tract.

Warning: Wet activated carbon depletes oxygen from the air and therefore dangerously low levels of oxygen may be encountered in enclosed spaces. Whenever workers enter a vessel containing activated carbon, the vessel's oxygen content should be determined and work procedures for potentially low oxygen areas should be followed.

Fire & Explosion Hazards: When burned, hazardous products of combustion including carbon oxides can occur. Irritating and/or toxic gasses due to decomposition of the product may be generated during a fire. Fight fire from a safe distance from a protected location. Contact with strong oxidizers such as ozone or liquid oxygen may cause rapid combustion.

Primary Route(s) of Exposure: Eye contact, skin contact, and inhalation, are possible routes of entry.

Inhalation – Acute Effects: Dust may be irritating to the respiratory tract and cause coughing or sneezing.

Skin Contact – Acute Effects: Dust may cause slight skin irritation.

Eye Contact – Acute Effects: Dust that contacts eyes may be irritating or cause mechanical injury.

Ingestion – Acute Effects: Ingestion of powder may be irritating to the gastrointestinal tract.

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SECTION 4 – FIRST AID MEASURES

Inhalation First Aid: Remove affected person from area to fresh air and provide oxygen if breathing is difficult. Give artificial respiration ONLY if breathing has stopped and give CPR ONLY if there is no breathing and no pulse. Obtain medical attention.

Skin Contact First Aid: Wash skin for 5 minutes with flowing water and soap. Clothing should be washed before reuse. Obtain medical assistance if irritation develops. DO NOT instruct person to neutralize affected skin area.

Eye Contact First Aid: Immediately irrigate eyes with flowing water continuously for 15 minutes while holding eyes open. Contacts should be removed before or during flushing. Seek medical assistance if irritation develops. DO NOT instruct person to neutralize.

Ingestion First Aid: Vomiting may need to be induced if directed by a physician or poison control center. DO NOT have unqualified personnel induce vomiting. Obtain medical attention immediately.

Medical Conditions Aggravated: Respiratory ailments may be aggravated by exposure to this product.

Note to Physician: No specific antidote. Treat symptomatically.

SECTION 5 – FIRE FIGHTING MEASURES

Flash Point/Method: Nonflammable

Auto Ignition Temperature: 840°C (1,710°F)

Upper/Lower Explosion Limits: Not applicable.

Extinguishing Media: Water spray, carbon dioxide, foam or dry chemical

Fire Fighting Procedures: In the event of a fire, wear full protective clothing and NIOSH approved self-contained breathing apparatus with full face piece, operated in positive pressure mode.

Fire & Explosion Hazards: When burned, hazardous products of combustion including carbon oxides can occur. Irritating and/or toxic gases due to decomposition of the product may be generated during a fire. Fight fire from a safe distance from a protected location. Contact with strong oxidizers such as ozone or liquid oxygen may cause rapid combustion.

Hazardous Products of Decomposition and/or Combustion: Carbon oxides.

NFPA Ratings:

HEALTH- 1 FLAMMABILITY- 0 REACTIVITY- 0 OTHER- none

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SECTION 6 – ACCIDENTAL RELEASE MEASURES

Spill/Leak Procedures: Clean up spills in a manner that does not disperse dust into the air.

Cleanup: Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of a material from eyes, skin, and clothing.

Regulatory Requirements: Spent (used) carbon should be disposed of in accordance with applicable laws. All disposal methods must be in compliance with all Federal, State, Local and Provincial laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

Disposal: Dispose of virgin (unused) carbon (waste or spillage) in a facility permitted for non-hazardous wastes. Spent (used) carbon should be disposed of in accordance with applicable laws. Do not reuse empty bags. Dispose of in facility permitted for non-hazardous wastes. **DO NOT DUMP INTO ANY SEWERS, ON THE GROUND OR INTO ANY BODY OF WATER.** All disposal methods must be in compliance with all Federal, State, Local and Provincial laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

SECTION 7 – HANDLING AND STORAGE

Handling: Avoid dispersion into air. Keep containers dry and closed. Follow good handling and housekeeping practices to minimize spills, generation of airborne dusts, and accumulation of dusts on exposed surfaces. Use with adequate exhaust ventilation to draw dust away from workers' breathing zones. Prevent or minimize exposures to dusts by using appropriate respirators, gloves and eye protection. Wash exposed skin areas thoroughly with soap and water. Use caution when pouring, using pneumatic transport, swirling, etc. as this material can become electrostatically charged and present a dust explosion hazard.

Storage: Avoid spilling media so as to avoid creating residual dust. Store at ambient atmospheric conditions. Product should be stored in a closed dry container. Maintain good housekeeping procedures. Store away from strong oxidizers such as ozone, liquid oxygen, chlorine, permanganate, etc.

General Comments: Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

SECTION 8 – PERSONAL PROTECTION/ EXPOSURE CONTROL

Respiratory Protection: If use conditions generate dust levels above the TLV/PEL, wear a NIOSH-approved particulate respirator or a NIOSH-approved cartridge respirator

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fitted with dust filters. Observe respirator use limitations specified by NIOSH or the manufacturer.

Skin Protection: Wear appropriate dust resistant clothing and gloves.

Eye Protection: Safety glasses with side shields. If eye contact or dusty conditions are likely, wear dust tight goggles.

Ventilation Protection: Provide ventilation if necessary to minimize exposure. Dilute ventilation acceptable, but local mechanical exhaust ventilations preferred, if practical, at sources of air contamination such as open process equipment.

Other Protection: Safety showers, with quick opening valves which stay open, and eye wash fountains, or other means of washing the eyes with a gentle flow of cool to tepid tap water, should be readily available in all areas where this material is handled or stored. Water should be supplied through insulated and heat-traced lines to prevent freeze-ups in cold weather.

Exposure Limits:

OSHA PEL ACGIH TLV
8 hr TWA, mg/m³ 8 hr TWA, mg/m³
Particulates Not
Otherwise 15 (total) ---
Regulated 5 (respirable) ---
Particulates Not
Otherwise --- 10 (inhalable)
Classified --- 3 (respirable)

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor: black granules without taste or odor

Vapor Pressure: zero

Vapor Density (Air=1): not applicable

Boiling Point: not applicable

Melting Point: not determined

Specific Gravity: 1.8 – 2.1

Solubility in Water: Insoluble

Volatile Percentage: 0%

pH: not determined

SECTION 10 – STABILITY AND REACTIVITY

Stability: This product is considered stable under the specified conditions of storage, shipment and use.

Incompatibilities: Contact with strong oxidizers such as ozone, liquid oxygen, chlorine, permanganate, etc. may result in rapid combustion. Avoid contact with strong acids.

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Polymerization: Hazardous polymerization will not occur.

Decomposition: Hazardous decomposition will produce carbon oxides.

Conditions to Avoid: Store away from strong oxidizers such as ozone, liquid oxygen, chlorine, permanganate, etc. Moist air will reduce the operating life.

SECTION 11 – TOXICOLOGICAL INFORMATION

Inhalation – Acute: Inhalation of carbon dust is mildly irritating to the lungs and can immediately give rise to an increased mucociliary transport and airway resistance mediated by the vagus. Inhalation LC50 (Rat) > 64.4mg/l.

Inhalation – Chronic: There are no known chronic inhalation effects.

Skin Contact – Acute: Skin contact is expected to be slightly irritating. The primary skin irritation index (rabbit) is 0.

Skin Contact – Chronic: There are no known chronic dermal effects.

Eye Contact – Acute: Eye contact can cause conjunctivitis, epithelial hyperplasia of the cornea, as well as eczematous inflammation of the eyelids.

Ingestion – Acute: Activated carbon is practically nontoxic. The probable oral lethal dose (human) is greater than 15g/kg; more than one quart (2.2 lbs) for a 150 lb person.

Ingestion – Chronic: There are no known chronic ingestion effects.

Carcinogenicity/Mutagenicity: There are no known carcinogenic/mutagenic effects.

Reproductive Effects: There are no known reproductive effects.

Neurotoxicity: There are no known neurotoxic effects.

Other Effects: No other effects of carbon are known.

Target Organs: Target organs include the respiratory system and the cardiovascular system.

SECTION 12 – ECOLOGICAL INFORMATION

The material, in its original state, is not harmful to the environment.

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SECTION 13 – DISPOSAL CONSIDERATIONS

Spill/Leak Procedures: Clean spills in a manner that does not disperse dust into the air, preferably a wet-down procedure or vacuum.

Cleanup: If material is not contaminated, spilled media can be re-bagged. Material that cannot be used or chemically reprocessed and empty containers should be disposed of in accordance with all applicable regulations. Product containers should be thoroughly emptied before disposal.

Regulatory Requirements: Generators of waste material are required to evaluate all waste for compliance with RCRA and any local disposal procedures and regulations. NOTE: State and local regulations may be more stringent than federal regulations.

Disposal: Material that cannot be used or chemically reprocessed and empty containers should be disposed of in accordance with all applicable regulations. Product containers should be thoroughly emptied before disposal. Warning: Wet activated carbon depletes oxygen from the air and therefore dangerously low levels of oxygen may be encountered. Whenever workers enter a vessel containing activated carbon, the vessel's oxygen content should be determined and work procedures for potentially low oxygen areas should be followed.

SECTION 14 – TRANSPORTATION INFORMATION

DOT Shipping Description: Not DOT regulated.

SECTION 15 – REGULATORY INFORMATION

OSHA Hazard Communication Standard: irritant

CERCLA Section 103 no. RQ: none

SARA Section 302 no

SARA Section 304 no

SARA Section 313 no

SARA Hazard Categories, Sections 311/312:

Acute: yes

Chronic: no

Fire: no

Reactive: no

Sudden Pressure Release: no

OSHA Process Safety no

CALIFORNIA Proposition 65: no

SECTION 16 – OTHER INFORMATION

Disclaimer: The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the user thereof. It is the buyer's responsibility to ensure that its activities comply with federal, state, provincial and local laws.

Rev 1: Updated Manufacturer's Name; revised Section 8.